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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,812	07/30/2001	Frank C. Hoppensteadt	9138-0018	9742

7590 11/04/2004  
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EXAMINER

HOLMES, MICHAEL B

ART UNIT PAPER NUMBER

2121

DATE MAILED: 11/04/2004.

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/831,812

Applicant(s)

HOPPENSTEADT ET AL.

Examiner

Michael B. Holmes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11, 12 and 15-55 is/are pending in the application.
- 4a) Of the above claim(s) 1-10, 13 and 14 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 12, 15-24 and 26-55 is/are allowed.
- 6) ☒ Claim(s) 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 07272004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.



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## Examiner's Detailed Office Action

### Response to Amendment

1. This Office Action is responsive to communication received on July 27, 2004, Amendment under 37 CFR § 1.111. Reconsideration and allowance of the present application 09/831,312 filed July 30, 2001 is respectfully requested by applicant. All such supporting documentation has been placed in applicant's file.

### Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

**(b) the invention was patented** or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 25 are rejected under 35 U.S.C. 102(b) as being anticipated by *Woodall* (USPN 5,446,828).

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Regarding claim 25. *Woodall* teaches a neurocomputer, a number  $n$  of active elements and a medium having no more than  $n$  connections operably coupled to each of the active elements for application of an input signal thereto, said active elements being phase locked loop oscillators.

(FIG. 1b, C 3, L 27-48) **IEEE** note: A phase locked loop ("PLL") is a circuit for synchronizing a local variable or rate controlled oscillator with the phase of a transmitted signal i.e., widely used in space communications for coherent carrier tracking, and threshold extension, bit synchronization and symbol synchronization. IEEE 100, Seventh Ed.

### Allowable Subject Matter

5. Claims 11-12, 15-24, & 26-55 are allowed.
6. The closest prior art *Burger* (USPN 4,815,475) and *Woodall* (USPN 5,446,828) does not teach or render obvious applicant's claimed invention.
7. Specifically, applicant's invention relates to the developing an artificial neural network or neurocomputer, which are biologically inspired; that is, they are composed of elements that perform in a manner analogous to the most elementary functions of the biological neuron. Artificial neural networks can modify their behavior in response to their environment. Moreover, because of their ability to simulate the apparently oscillatory nature of brain neurons, oscillatory neurocomputers are among the more promising types of neurocomputers.
8. With regards to claim 11, *Burger & Woodall*, does not disclose "... *the source of a rhythmic forcing input producing an input of a third frequency  $f_3$ , establishing communication between the at least one oscillating element and the at least one other oscillating element.*"

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9. With regards to claim 19, *Burger & Woodall*, does not disclose “ ... (c) *a source connected to the conducting medium to impart oscillator signals of various frequencies to the conducting medium, the signals of various frequencies including frequencies effective to bring two or more of the oscillators into communication.*”

10. With regards to claim 22, *Burger & Woodall*, does not disclose “ ... *causing said rhythmic input to oscillate said medium at a third frequency.*”

11. With regards to claim 24, *Burger & Woodall*, does not disclose “ ... *operably coupling each one of said connectors to a conductive medium, and operably coupling said medium to a rhythmic input.*”

12. With regards to claim 26, *Burger & Woodall*, does not disclose “ ... (d) *a rhythmic external forcing input coupled to the common medium to impart an oscillatory input to the medium and via the medium to the processing elements, whereby any two oscillators of differing frequency communicate when the frequency spectrum of the oscillatory input imparted by the rhythmic external forcing input includes a frequency equal to the difference between the frequencies of the two oscillators.*”

13. With regards to claim 42, *Burger & Woodall*, does not disclose “ ... (d) *the means for producing a rhythmic input comprising means for producing inputs having frequency components that are the differences of frequencies of two or more of the means for oscillating of the means for processing.*”

14. With regards to claim 45, *Burger & Woodall*, does not disclose “ ... (e) *effecting communication between at least two of the  $n$  processing elements by providing in the oscillatory input a*

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*frequency spectrum that includes a frequency equal to the difference between the frequencies of the at least two oscillators."*

### Response to Arguments

15. Examiner respectfully disagrees with applicant remarks. The recited text (*Woodall*) does describe the limitations of the claims 25, and thus, are relevant. **IEEE** note: A phase locked loop ("PLL") is a circuit for synchronizing a local variable or rate controlled oscillator with the phase of a transmitted signal i.e., widely used in space communications for coherent carrier tracking, and threshold extension, bit synchronization and symbol synchronization. IEEE 100, Seventh Ed.

### Examiners Summary

16. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

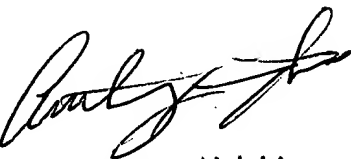
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## Correspondence Information

17. Any inquiries concerning this communication or earlier communications from the examiner should be directed to **Michael B. Holmes** who may be reached via telephone at **(571) 272-3686**. Moreover, the examiner can normally be reached Monday through Friday between 7:00 A.M. and 5:00 P.M. est.

If attempts to reach the examiner by telephone are unsuccessful, the **Examiner's Supervisor, Anthony Knight**, may be reached at **(571) 272-3687**.

***Michael B. Holmes***  
Patent Examiner  
Artificial Intelligence  
Art Unit 2121  
United States Department of Commerce  
Patent & Trademark Office



Anthony Knight  
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Group 3600